



Europäisches Patentamt  
European Patent Office  
Office européen des brevets

(11) Publication number:

**0 086 418**  
**A2**

(12)

## EUROPEAN PATENT APPLICATION

(21) Application number: 83101100.2

(51) Int. Cl.<sup>3</sup>: **B 25 C 3/00**

(22) Date of filing: 07.02.83

(30) Priority: 11.02.82 SE 8200827

(71) Applicant: Aktiebolaget Bygg- och Transportekonomi (BT), Box 331, S-595 00 Mjölby (SE)

(43) Date of publication of application: 24.08.83  
Bulletin 83/34

(72) Inventor: Puolakainen, Nikolai, Industrigatan 11, S-595 00 Mjölby (SE)

(84) Designated Contracting States: CH DE FR GB IT LI

(74) Representative: Erixon, Bo, Kooperativa Förbundet (KF)  
Patent Department Box 15200, S-104 65 Stockholm (SE)

(54) Procedure and tool for mounting elongated cylindrical elements in predrilled holes.

(57) In a procedure for mounting elongated cylindrical elements in predrilled holes the element (5) is first fitted with resilient retention in one end of an axial through hole (2) in a sleeve (1). Accommodated at the other end of the hole (2) is a striker (3). The sleeve (1) with the cylindrical element (5) is applied to the mouth of the predrilled hole and the striker (3) is then subjected to blows so that it strikes the element (5) and drives it into the hole.

A tool for implementing the procedure embraces a sleeve (1) with an axial through hole (2). One end of the hole (2) is arranged to accommodate an elongated striker (3) and the other end to accommodate the cylindrical element (5) which is retained in the sleeve (1) by spring pressure.

EP 0 086 418 A2

Procedure and tool for mounting elongated cylindrical elements  
in predrilled holes

The present invention refers to a procedure for mounting elongated, principally cylindrical elements such as expander pins in predrilled holes, for example.

Expander pins are resilient locking pins used for the demountable assembly of various machine elements or mechanical components, e.g. for mounting wheels and the like on shafts. The expanding capability is usually achieved by designing the expander pin as a slotted, springy sleeve of alloy steel which is made resilient by heat treatment. Expander pins are mounted in holes having a diameter less than that of the pin, with the result that the pin is compressed when driven into the hole. Since the pin endeavours to spring back to its normal expanding state it exerts sufficient pressure against the inner surface of the hole to prevent axial movement.

Mounting of expander pins in holes is usually carried out manually by holding the pin at the mouth of the hole and driving it into the hole with a hammer or other impact tool. This form of mounting is time-consuming and troublesome, particularly in confined spaces.

With the present invention a procedure and a tool has been

achieved which has the effect of substantially facilitating this mounting work. For this purpose the invention has the characteristics specified in the following patent claims.

The invention will be described in greater detail in the following with reference to the version shown in the drawing. The figure in the drawing shows a longitudinal cross-section through a tool according to the invention.

The tool consists of a sleeve 1 which is provided with an axial through hole 2. A striker 3 is so arranged in the hole 2 that it can move in an axial direction. The end of striker 3 outside the sleeve 1 is designed as an impact head 4. The cylindrical element which in the version shown consists of an expander pin 5 is arranged to be accommodated in the hole 2 at the opposite end of the sleeve 1 to the aforementioned impact head 4.

For retaining the expander pin 5 a chiefly radial hole 6 is provided in the sleeve 1 close to the end accommodating expander pin 5. Positioned in the aforementioned hole is a loosely fitted locking pin 7 which rests against the expander pin. This locking pin is retained and pressed resiliently against the expander pin 5 by a rubber ring 8. The rubber ring 8 is fitted in an annular groove 9 in the surface of sleeve 1 adjacent to the radial hole 6. The resilience of rubber ring 8 is adapted so that expander pin 5 is retained by the friction, even when the tool is pointed downward, but not so that mounting of the pin is noticeably obstructed.

A corresponding locking device can be utilized to retain the striker 3 in sleeve 1. A return spring (not shown) can be arranged between the striker and the sleeve to return the striker to the position of rest after each blow. Further, the aforementioned striker can be provided with a means of restricting its outward movement.

The spring force applied to expander pin 5 from the side can naturally be arranged in many ways and the version described above is only an example.

The tool can also be designed for easy connection to the pneumatic impact tool.

When using the tool described above for mounting an expander pin 5 in a predrilled hole, the pin 5 is first fitted in the hole 2 in the sleeve 1. Locking pin 7 is pressed against expander pin 5 by means of rubber ring 8. The sleeve 1 is then applied to the predrilled hole and expander pin 5 is located in its mouth. Impact head 4 is subjected to repeated blows with the effect that the striker 3 strikes expander pin 5 and drives it into the hole.

Claims

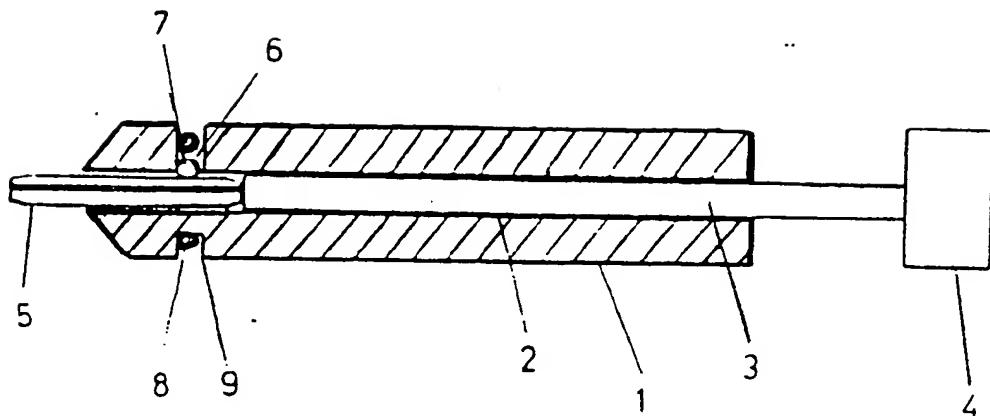
1. A procedure for mounting elongated, principally cylindrical elements such as expander pins (5) in predrilled holes, for example, characterized in that the element (5) before mounting is fitted and resiliently retained in one end of an axial through hole (2) in a sleeve (1) the other end of which is occupied by a striker (3) and said sleeve (1) then being applied to an object with the element (5) against a predrilled hole, following which the striker (3) is subjected to impacts so that it strikes the element (5) and drives it into the aforementioned predrilled hole.
2. A procedure as in Claim 1, characterized in that the sleeve (1) is fitted to a pneumatic impact tool for achieving blows on the striker (3).
3. A tool for mounting elongated, principally cylindrical elements such as expander pins (5) as in the procedure in Claim 1, characterized by a sleeve (1) provided with an axial through hole (2) one end of which is arranged to accommodate a striker (3) and the other end to accommodate and resiliently retain the aforementioned cylindrical element (5).
4. A tool as in Claim 3, characterized in that the sleeve (1) close to the end accommodating the element (5) is designed with a mainly radial hole (6) which extends inward to the through hole (2) in the sleeve (1) in which hole a resilient device (7) is arranged to press against the element (5) with a force so adapted that the element (5) is retained even when the sleeve (1) is in a vertical position but so that movement of the element is not noticeably prevented in connection with mounting.
5. A tool as in Claim 4, characterized by an annular groove

(9) in the surface of the sleeve (1) close to the radial hole (6) in which groove (9) a resilient ring (8) is arranged to press a loosely fitted locking pin (7) present in the hole (6) against the element (5) for the purpose of retaining it.

6. A tool as in Claim 5, characterized in that the resilient ring (6) is of rubber.
7. A tool as in any of Claims 3-6, characterized in that the striker (3) is provided with a means of restricting its outward movement.
8. A tool as in Claim 7, characterized in that the striker (3) is designed with an impact head (4) situated outside the hole (2) which serves as a stop to interrupt the movement of the striker (3) into the sleeve (1).
9. A tool as in any of Claims 3-8, characterized in that a return spring is arranged to counteract the movement of the striker (3) into the sleeve (1).
10. A tool as in any of Claims 3-9, characterized in that it is designed to be connected to a pneumatic impact tool.

0086418

1/1



THIS PAGE BLANK (USPTO)



Europäisches Patentamt  
European Patent Office  
Office européen des brevets

(11) Publication number:

0 086 418  
A3

(12)

## EUROPEAN PATENT APPLICATION

(21) Application number: 83101100.2

(51) Int. Cl.<sup>3</sup>: B 25 C 3/00

(22) Date of filing: 07.02.83

(30) Priority: 11.02.82 SE 8200827

(43) Date of publication of application:  
24.08.83 Bulletin 83/34

(88) Date of deferred publication of search report: 12.09.84

(84) Designated Contracting States:  
CH DE FR GB IT LI

(71) Applicant: Aktiebolaget Bygg- och Transportekonomi  
(BT)  
Box 331  
S-595 00 Mjölby(SE)

(72) Inventor: Puolakainen, Nikolai  
Industrigatan 11  
S-595 00 Mjölby(SE)

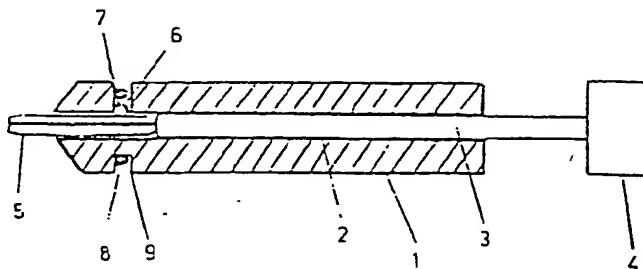
(74) Representative: Erixon, Bo  
Kooperativa Förbundet (KF) Patent Department Box  
15200  
S-104 65 Stockholm(SE)

(54) Procedure and tool for mounting elongated cylindrical elements in predrilled holes.

(57) In a procedure for mounting elongated cylindrical elements in predrilled holes the element (5) is first fitted with resilient retention in one end of an axial through hole (2) in a sleeve (1). Accommodated at the other end of the hole (2) is a striker (3). The sleeve (1) with the cylindrical element (5) is applied to the mouth of the predrilled hole and the striker (3) is then subjected to blows so that it strikes the element (5)

and drives it into the hole.

A tool for implementing the procedure embraces a sleeve (1) with an axial through hole (2). One end of the hole (2) is arranged to accommodate an elongated striker (3) and the other end to accommodate the cylindrical element (5) which is retained in the sleeve (1) by spring pressure.



EP 0 086 418 A3



European Patent  
Office

EUROPEAN SEARCH REPORT

0086418  
Application number

EP 83 10 1100

DOCUMENTS CONSIDERED TO BE RELEVANT		Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.?)						
Category	Citation of document with indication, where appropriate, of relevant passages								
X	US-A-3 788 537 (FOX)  * Figures 1, 6 *	1, 3, 7, 9	B 25 C 3/00						
Y		2, 4, 5, 6, 10							
Y	* Figure 1 *  --- FR-A-2 291 001 (CHATARD) * Page 1, lines 2-3 *	2, 10							
X	--- US-A-2 973 520 (BELL)  * Figure 2 *	1, 3, 4, 7, 8							
X	--- US-A-3 036 482 (KENWORTHY)  * Figure 1 *	1, 3, 7, 8	TECHNICAL FIELDS SEARCHED (Int. Cl.?)						
Y	--- US-A-3 979 978 (SMOLIK) * Figures 4, 5, 7 *	4, 5, 6	B 25 C 1/00 B 25 C 3/00						
X	--- US-A-2 839 754 (PFAFF)  * Figures 1-7 *	1, 3, 4, 5, 7, 8, 9							
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 34%;">Examiner</td> </tr> <tr> <td>THE HAGUE</td> <td>04-06-1984</td> <td>LOKERE H.P.</td> </tr> </table> <p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone      Y : particularly relevant if combined with another document of the same category      A : technological background      O : non-written disclosure      P : intermediate document</p> <p>T : theory or principle underlying the invention      E : earlier patent document, but published on, or after the filing date      D : document cited in the application      L : document cited for other reasons      &amp; : member of the same patent family, corresponding document</p>				Place of search	Date of completion of the search	Examiner	THE HAGUE	04-06-1984	LOKERE H.P.
Place of search	Date of completion of the search	Examiner							
THE HAGUE	04-06-1984	LOKERE H.P.							